SPECIFICATION

TITLE OF INVENTION

The Chelsea Swing Arm System Assembly.

CROSS REFERENCE TO RELATED APPLICATIONS

Not Applicable

STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT

Not Applicable

REFERENCE TO A SEQUENCE LISTING, A TABLE, OR A COMPUTER PROGRAM LISTING COMPACT DISC

Not Applicable

BACKGROUND OF INVENTION

There are two basic side car chassis designs or concepts:

The hard chassis design has the wheel axle attached to the chassis and is engineered to match the motorcycle ground clearance (i.e. the side car chassis axle height is designed to match the front and rear axle on the motorcycle), which allows for the fitment of a matching motorcycle wheel. The design, however, has been criticized in recent years, because it does compromise the passengers safety, especially in corners as the sidecar wheel has the tendency to lift. At higher speeds above 55 mph, the design allows for wind buffeting. This occurs, as there is more area under the side car body for the wind to drive the body upward, creating a rocking front to rear, up and down motion. These are just a couple of reasons side car manufacturers were moved toward a swing arm type concept. The swing arm concept allows for a side car chassis to be lowered very close to the ground, as the swing arm is independent from the main chassis structure.

This feature eliminates unsafe wheel lift in corners, and wind buffeting and lift at higher speeds.

All side car manufacturers have been aware that markets exist for a motorcycle wheel match on swing arm concept chassis. The basic reason for this absence in the industry is that until now they have had to install a 13 - inch diameter or less trailer lug type wheel to allow the much lower ground clearance desired for safety or stability in corners and higher speeds.

While there are side car chassis being produced that utilize a swing arm concept as opposed to a hard chassis with a main leaf spring to support the side car, there are no known side car swing arm chassis being produced that will allow the axle swing arm wheel axle to accommodate the fitment of a motorcycle type wheel.

BRIEF SUMMARY OF THE INVENTION

The Chelsea Swing Arm System Assembly does address the past inability to install a motorcycle type wheel as opposed to a small diameter trailer wheel on a motorcycle side car chassis with an existing swing arm concept chassis. This system retains the low ground clearance preferred in today's market for passenger safety. The larger diameter wheel-tire capability also adds to safety because of more tire surface area to the ground which improves stability.

BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWINGS

Figure 00 is a completed Chelsea Swing Arm System Assembly.

Figure 1 is a detailed drawing of the Chelsea Swing Arm System Assembly mounting plate component.

Figure 2 is a detailed drawing of the Chelsea Swing Arm System Assembly swing arm main shaft component.

Figure 3 is a detailed drawing of the Chelsea Swing Arm System Assembly shock absorber mount component.

Figure 4 is a detailed drawing of the Chelsea Swing Arm System Assembly axle shaft component.

DETAILED DESCRIPTION OF THE INVENTION

The Chelsea Swing Arm System Assembly was invented so as to allow for the fitment of a motorcycle type wheel on a motorcycle side car with a swing arm concept chassis.

The material type used in manufacturing the components for the Chelsea Swing Arm Assembly was 4140 steel. The basic dimensions of the material utilized were as follows: 1.000 x 4.0625 x 13.0 plate steel;1.2500 x 4.000 round shaft stock;1.3750 x 10.0 round shaft stock; 1.5000 x 8.0 round shaft stock.

The swing arm plate component was manufactured by flame cutting the plate to nominal size. The three shaft mounting holes were then bored into the plate with a milling machine, so as to allow for a press fit. The plate was then milled on all surfaces to a mill finish (refer to Fig. 1 drawing - Swing Arm Mounting Plate).

The 1.250 round shaft stock was cut to nominal length. The stock was then faced off on a lathe. The shaft was then turned to size. The threaded end was drilled and tapped to size. The shaft was then turned to a press fit size with a shoulder as a seat on the opposite end (refer to Fig. 3 drawing - Shock Absorber Mount).

The 1.3750 round shaft stock was cut to nominal length. The stock was then faced off on a lathe. The shaft was then turned to size. The threaded end was threaded and also drilled for a 0.1250 cotter pin hole. The shaft was then turned to a press fit size with a shoulder as a seat on the opposite end (refer to Fig. 4 drawing - Axle Shaft).

The 1.5000 round shaft stock was cut to nominal length. The stock was then faced off on a lathe. The shaft was then turned to size. The threaded end was threaded to size.

The shaft was then turned to a press fit with a shoulder as a seat on the opposite end (refer to Fig 2 drawing - Main Swing Arm Shaft).

The last step was to quality check all components, then press the three shaft components into the plate with a 50 ton press and weld them from the back side (refer to Fig. 00 drawing - System Assembly.)

CLAIM

I claim that my invention is a swing arm system assembly that allows for the fitment of a motorcycle type wheel to be to be retrofitted to any motorcycle sidecar chassis with a existing swing arm chassis design that currently utilizes a 13-inch diameter trailer lug type wheel or less.

ABSTRACT OF THE DISCLOSURE

Prior to me inventing this system, sidecar manufacturers were limited to two basic chassis designs. The hard chassis leaf spring/buggy type design allows for the fitment of a motorcycle type wheel that will match the motorcycle, however it has proved dangerous, because of the high ground clearance. This designed has been used by several sidecar manufacturers and was introduced in the early 1900's. At that point in time a motorcycle fitted with a sidecar would travel at between 45 and 50mph. Although improvements have been made on the basic design over the years, it is not conducive to modern day speeds and advanced technology in the industry.

This invention affords the ability to easily retrofit a system assembly to a modern day sidecar swing arm chassis utilizing a 13-inch diameter or less trailer lug type wheel, which allows the fitment of a motorcycle type wheel.

The Chelsea Swing Arm System Assembly retains the very low ground clearance (lower center of gravity) as a 13-inch diameter or less trailer lug type wheel used in conjunction with the modern day safer swing arm chassis concept. The lower to the ground the sidecar rides, the less chance of wheel lifting in turns or wind lift at today's higher speeds. A larger circumference wheel and tire also add significant stability as there is more tire surface on the road. The system also allows the more aesthetically friendly wheel matching capability that sidecar motorcyclist prefer. It was to these ends that The Chelsea Swing Arm System Assembly was invented.